

*P. graminis*. Sowings of teleutospores of *Puccinia Phragmitis* (Schum.) Körn. showed that *Rumex aquaticus* L., *R. confertus* Willd., *R. maritimus* L., *R. patientia* L., *R. arifolius* All., *R. bucephalophorus* L., *R. fennicus* Murb., *R. thyrsiflorus* Fingerh., *Rheum palmatum* L., *R. undulatum* L., *R. compactum* L., and *R. tartaricum* L. are additional aecidial hosts for this rust. Further experiments with the crown rusts lead the author to doubt the validity of the species *Puccinia coronifera* which KLEBAHN separated from *P. coronata* (Corda) Kleb. This doubt is founded on the one hand on the infection of a number of typical *P. coronata* hosts with aecidiospores from *Rhamnus cathartica* L., and on the other hand on the infection of *Avena sativa* L., a *P. coronifera* host, by aecidiospores from *R. Frangula* L., the aecidial host for *P. coronata*.—H. HASSELBRING.

**Origin of herbaceous angiosperms.**—The question of the relative antiquity of herbaceous and woody angiosperms has been considered at some length by SINNOTT and BAILEY.<sup>25</sup> It has frequently been assumed, although definite statements of the view are rare, that herbaceous plants preceded the woody, and such a view was likely to be held as long as the monocotyledons were believed to be the older angiosperms. The authors deal with evidence from four sources: paleobotany, anatomy, phylogeny, and phytogeography, and reach a conclusion entirely at variance with the prevailing theory. Under the first head it is pointed out that the ancient club mosses and horsetails were arborescent, but it is admitted that the evidence is not conclusive. The anatomical evidence hinges on the question whether the primary wood was originally a continuous layer or a series of bundles. Examination of various groups of plants leads to the inference that the cambium was originally a complete ring, and that its segregation into "fascicular" and "interfascicular" cambium is a relatively recent occurrence. In explaining how this may have come about, JEFFREY attaches importance to the leaf traces, but from this view our authors dissent; they attribute the production of discrete bundles to a simple decrease in activity of the cambium. In connection with phylogeny, a survey of the families of angiosperms shows that the primitive types are much more woody than the recent ones. In more than half of the families of dicotyledons there are no herbaceous species, and exclusively herbaceous families consist of insectivores, parasites, or other recent forms. Under the heading of phytogeography a large array of facts is gathered, leading to the conclusion that angiosperms made their appearance in the tropics as woody plants, and spread into the north temperate zone, where gradual stunting occurred, largely as a consequence of lowered temperature, resulting finally in the production of annuals. Such herbaceous plants have subsequently spread to all parts of the earth's surface. Insular and other endemic flora

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<sup>25</sup> SINNOTT, E. W., and BAILEY, I. W., Investigations on the phylogeny of the angiosperms 4. The origin and dispersal of herbaceous angiosperms. Ann. Botany 28:547-600. pls. 39, 40. 1914.



are examined, and the influence of glacial periods is considered.—M. A. CHRYSLER.

**Some abnormal pines.**—BOODLE<sup>26</sup> has described an abnormality obtained from a specimen of *Pinus Laricio* growing in the Kew Gardens. Most of the foliage of the tree is normal, but pairs of conerescent leaves are produced every year in considerable number. The fusion of the two leaves seems to be very much as has been described for the double needles of *Sciadopitys*.

WORSDELL<sup>27</sup> has described a remarkable shoot of *Pinus Thunbergii* grown in England. Some of the scale leaves bear ordinary axillary spur shoots with two needles, but a majority of them subtend a very different axillary structure, the most frequent form being "a swollen fleshy foliar organ arching outwards over or against the subtending scale leaf." Another form which the axillary shoot assumes is that of a pair of transversely placed fleshy leaves. The phenomenon of the recurved leaf and its origin by the uniting of the first two leaves of an axillary shoot by their adaxial margins is additional proof of the accepted character of the ovuliferous scale of the Abietineae.—J. M. C.

**Death camas.**—This name is applied to species of *Zygadenus* to distinguish them from *Quamasia* and *Calochortus*, which were also known as camas, and were much used for food by the Indians. Reports of the poisoning of stock from eating the roots and leaves of the species of *Zygadenus* led to its investigation by MARSH and CLAWSON.<sup>28</sup> It seems that *Zygadenus* grows abundantly on many of the stock ranges of the west, and is one of the most important sources of loss to sheepmen. All the species are poisonous, through the whole season of their growth. The toxicity of the bulbs and tops is about the same, while the seeds are much more toxic than any other part of the plant. The poisonous principle is an alkaloid or alkaloids allied to veratrin and cevadin. Sheep, cattle, and horses are poisoned by the plant, but the fatalities are almost entirely confined to sheep.—J. M. C.

**Thelephoraceae.**—BURT<sup>29</sup> has begun the publication of a monograph of the North American Thelephoraceae. The first three papers contain a general discussion of the limitations of the family, a key to the genera, 23 of which are recognized, and a presentation of three genera. The genera presented are *Thelephora*, with 23 species, 3 of which are new; *Craterellus*, with 18 species, 6 of which are new; and *Cyphella*, with 21 species, 5 of which are new.—J. M. C.

<sup>26</sup> BOODLE, L. A., Conerescent and solitary foliage leaves in *Pinus*. *New Phytol.* 14:19-22. *figs.* 4. 1915.

<sup>27</sup> WORSDELL, W. C., An abnormal shoot of *Pinus Thunbergii* Parl. *New Phytol.* 14:23-26. *figs.* 5. 1915.

<sup>28</sup> MARSH, C. D., CLAWSON, A. B., and MARSH, H., *Zygadenus*, or death camas. *Bull. U.S. Dept. Agric.* no. 125. pp. 46. 1915.

<sup>29</sup> BURT, E. A., The Thelephoraceae of North America. I, II, III. *Annals Mo. Bot. Gard.* 1:185-228, 327-350, 357-382. *pls.* 4, 5, 15-17, 19. 1914.